

CLAIMS

1. An extensible composite member having an extensible portion comprising two sheet materials and a plurality of elastic members intermediate between the sheet materials,
5 the two sheet materials being discontinuously bonded to each other at joints in the extending direction of the extensible portion and a direction perpendicular to the extending direction of the extensible portion,
the elastic members being arranged in the extensible portion avoiding the joints between the sheet materials and having both ends thereof fixed to the sheet materials,
10 each of the two sheet materials forming a plurality of folds continuously running across a plurality of the elastic members.
2. The extensible composite member according to claim 1, wherein the joints between the two sheet materials are formed by fusion bonding the sheet materials.
3. The extensible composite member according to claim 1 or 2, wherein the joints
15 between the sheet materials are arranged in a staggered pattern, have a pitch P1 of 1 to 30 mm and each have a length L1 of 0.1 to 5 mm both measured in the extending direction of the extensible portion with the extensible portion being in the extended state, and the ratio of the pitch P1 to the length L1 ($P1/L1$) ranges from 1.1 to 300.
4. The extensible composite member according to claim 1 or 2, wherein the joints
20 between the sheet materials are arranged to line up in both the extending direction of the extensible portion and a direction perpendicular thereto, the joints lining in the perpendicular direction are placed between every two adjacent elastic members, the joints have a pitch P2 of 1 to 20 mm and each have a length L2 of 0.1 to 5 mm both measured in the extending direction of the extensible portion with the extensible portion
25 being in the extended state, and the ratio of the pitch P2 to the length L2 ($P2/L2$) ranges from 1.1 to 200.
5. A method of making the extensible composite member according to claim 1, comprising the steps of:
arranging a plurality of elastic members in their stretched state on a first sheet

material and superposing a second sheet material on the side of the first sheet material having the elastic members on,

partly joining the first and second sheet materials in their superposed state in an area where the elastic member is absent,

5 subjecting the first and the second sheet materials with the elastic members therebetween to a process for fixing the elastic members to the first and the second sheet materials along portions spaced apart from each other in the extending direction of the elastic members, and

10 allowing the elastic members to contract to cause each of the first and the second sheet materials to form a plurality of folds.

6. An extensible composite member comprising two sheet materials and a plurality of elastic members intermediate between the sheet materials,

15 the sheet materials being discontinuously bonded to each other in the extending direction of the elastic members and a direction perpendicular thereto to form a plurality of joint lines each composed of a plurality of joints in each of the two directions,

20 at least two of the elastic members being disposed along the joint lines in the extending direction to overlap each of the joints composing the respective joint lines and fixed between the sheet materials at the individual joints, and

20 the sheet materials each forming folds between the joint lines in the direction perpendicular to the extending direction.

7. The extensible composite member according to claim 6, wherein the joint lines in the direction crossing the extending direction each have a ratio of a pitch P11 of arranging the fusion joints to a length L11 of the individual fusion joints ($P11/L11$) ranging from 1.05 to 80, and the pitch P11 of arranging the fusion joints is 1 to 40 mm.

25 8. The extensible composite member according to claim 6 or 7, wherein the joints between the two sheet materials are formed by fusion bonding the sheet materials.

9. A method of making the extensible composite member according to claim 6, comprising the steps of disposing a plurality of elastic members in their stretched state between two sheet materials and partly heat-pressing the superposed sheet materials with a plurality of projections to partly fusion bond the sheet materials to form the

30

joints,

the step of partly heat-pressing being carried out in a manner that does not result in cutting the elastic members.

10. An extensible composite member comprising two sheet materials and a plurality of elastic members disposed between the sheet materials,
the two sheet materials being partly bonded to each other to form joints,
the joints lining up to make joint lines in a direction crossing the extending direction of the elastic members,
a part of the joint lines and another part of the joints being different in positions of the joints making up each joint line in the direction crossing the extending direction,
the elastic members being each fixed between the sheet materials at at least part of the joints, and
the sheet materials each forming folds between every two adjacent joint lines.
11. The extensible composite member according to claim 10, wherein the width of the joint line in the extending direction of the elastic members is 1.0 to 50 times the length of the individual joints in the extending direction of the elastic members.
12. The extensible composite member according to claim 10 or 11, wherein the positions of the joints composing the individual joint lines in a crossing direction crossing the extending direction of the elastic members vary from one end to the other in the extending direction of the elastic members by a given distance in the crossing direction.
13. The extensible composite member according to claim 12, wherein the positions of the joints composing the individual joint lines in a crossing direction crossing the extending direction of the elastic members vary from one end to the other in the extending direction by a distance corresponding to 3% to 50% of the pitch of the joints in the joint lines.
14. The extensible composite member according to any one of claims 10 to 13, wherein the ratio of the pitch P11 of the fusion joints in the individual joint lines to the length L11 of the individual fusion joints in the joint lines ($P11/L11$) ranges from 1.05

to 80, and the pitch P11 of the fusion joints is 1 to 40 mm.

15. The extensible composite member according to any one of claims 10 to 14, wherein the joints are formed by fusion bonding the two sheet materials.

5 16. A method of making the extensible composite member according to claim 10, comprising the steps of disposing a plurality of elastic members in their stretched state between two sheet materials and partly heat-pressing the superposed sheet materials with a plurality of projections to partly fusion bond the sheet materials to form the joints,

10 the step of partly heat-pressing being carried out in a manner that does not result in cutting the elastic members.